

## **LBLN Environment Health and Safety Division**

### **FY 2002 EH&S Self-Assessment Report (July 1, 2001 through June 30, 2002)**

**July 2002**

**EH&S Division Director:** \_\_\_\_\_

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**Date:** \_\_\_\_\_

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**John Chernowski**

**Date:** \_\_\_\_\_

## **Goals and Objectives**

The objective of the Environment, Health & Safety Division (EH&S) is to conduct all operations safely and in an environmentally sound manner. The Division follows the five core functions and seven guiding principles of Integrated Safety Management (ISM) to accomplish this goal. Therefore, EH&S has written an ISM Plan that fully incorporates these functions and principles and serves to guide Division policies and procedures. The Division Self Assessment Performance Criteria are derived from the core functions of ISM. Proficiency in meeting the performance requirements of the Self Assessment Performance Criteria indicates how effectively EH&S is performing to the standards established through ISM.

## **Integrated Safety Management Performance**

The EH&S Division has fully incorporated the principles and functions of Integrated Safety Management into the work conducted by staff. ISM is evident in defining work, identifying hazards, controlling hazards, performing work, and considering the work process and implementing improvements.

ES&H considerations play an integral role in defining the work of the Division. EH&S has established clear lines of health and safety communication. Communications occur in several forms, including line management and staff interaction, group and Division all-hands meetings, and Safety Committee meetings. EH&S mandates health and safety accountability for all personnel. All Division staff and participating guests are aware of their ES&H responsibilities.

EH&S line management exercises due diligence in evaluating all work in order to identify hazards. The Division uses formal authorizations and self-authorizations to mitigate hazards inherent in work performed. All formal authorizations are current. All groups in the division use the HEAR database to inventory hazards in group workspace. These updates were completed in the spring of 2002. For activities performed outside of division workspace, groups rely upon their own mechanisms for identifying and controlling hazards, such as procedures and safety plans.

The EH&S Division has been proactive in controlling hazards. The Division implements engineering and administrative mechanisms for hazard control. All engineering controls, including fume hoods and fixed monitors, are current on their certifications. All emergency contact information and postings, as verified during the self-assessment process, is current and accurate. Finally, the Division has an aggressive ergonomic program, stressing training and evaluations, which has increased ergonomic awareness and contributed to reducing recordable ergonomic injuries. However, Division staff sustained one ergonomic injury this year.

EH&S needs to improve in performing work safely. Division staff incurred four recordable injuries this year, up from two recordable injuries last year. The division has numerous authorizations, including Radiological Work Authorizations (RWAs),

Radiological Work Permits (RWPs), and Sealed Source Authorizations (SSAs). An unfortunate incident resulted in several violations to an RWA, including multiple minor and major violations, and one serious violation. The division is more successful in other areas of performing work. Staff is diligent in fulfilling training requirements to ensure proficiency in performing work safely. The Division's waste management performance is outstanding, as no QA exception reports and no Nonconformance and Corrective Action Reports (NCARs) were recorded for EH&S waste.

EH&S has an established feedback program that drives improvement of the Division's work systems. Line management actively participates in corrective action planning. Important components of the Division improvement mechanism are the Division Safety Committee, Accident Review Board, and consistent line management inspections of Division workspace.

### **Noteworthy Practices**

Management involvement has played an important role in the Division's ES&H performance. For most of the year, the Division Deputy chaired the Division Safety Committee meetings, facilitating meaningful safety improvements and demonstrating management's commitment to a safe workplace. The Safety Engineering group leader now chairs these meetings. The Accident Review Board, which includes senior Division management, discusses all accidents, validates the adequacy of the corrective actions, and verifies that these improvements have been implemented. Line management is responsible for initiating safety discussions with staff and inspecting staff workspace.

The Division has continued to experience success in reducing ergonomic injuries to staff. In the FY99 Self Assessment year, EH&S had six recordable ergonomic injuries. In the FY00 Self-Assessment period the Division had two ergonomic injuries. In the FY01 Self-Assessment year, EH&S recorded one ergonomic injury. EH&S also had one ergonomic injury in the FY02 Self-Assessment year. Division staff is very conscientious in completing Ergonomics for Computer Users, EHS 0060. 97% of staff required to take this class have done so. All employees who perform lifting and bending work are required to complete MoveSmart training. 30 division employees have taken MoveSmart training or retraining. Finally, EH&S promotes ergonomic evaluations for staff workstations. 32 staff members have had ergonomic evaluations of their computer workstations. The strategy of increased ergonomic awareness, training, and evaluations has resulted in a decline in ergonomic injuries in the Division.

Division line management was very diligent in reviewing division workspace and documenting hazards and equipment in the HEAR database. All group leaders completed the inventory update for their group workspaces. The result is that 100% of division workspace was reviewed for hazards, and all hazards noted are controlled.

EH&S performed extremely well in managing hazardous and radioactive waste this performance year. The Division had zero nonconformance and corrective action reports (NCARs) and zero QA exceptions issued for inaccurate waste characterization. 180 tests

were performed on waste generated by EH&S, and in every case waste was characterized properly.

EH&S has a very active safety committee that meets on a monthly basis. Committee members are charged with communicating Safety Committee activities to their groups, usually during group all-hands meetings. Committee members also bring forward to the Committee safety issues and concerns expressed by their respective groups. In this way, the Division has established a mechanism for communicating safety both from the Division to the group and individual, and also from the group and individual to the Division as a whole. The Safety Committee has also made recommendations for promoting a safer workplace environment to Division management. These recommendations have been adopted by the Division and integrated into the Division ISM Plan. The Safety Committee is also responsible for conducting the formal Division Self-Assessment activities. Committee members query all group leaders about their safety programs and inspect all division workspace.

The Division has an active Accident Review Board consisting of senior management, the Division EH&S Liaison, and the Division Safety Coordinator. The committee interviews injured staff and their supervisors. In this way, the Board ensures that the root causes and corrective actions identified on the Supervisor Accident Analysis Reports (SAARs) are appropriate to prevent future injury. The Accident Review Board is also charged with sharing lessons learned within the EH&S Division and possibly the institution.

### **Opportunities for Improvement**

The EH&S Division has six RWAs, four SSAs, and many RWP (the number changes frequently because these authorizations are often short term). In general, the Division was very successful in adhering to the requirements of the authorizations. However, there was a RWA noncompliance that resulted in eight violations, including one serious and three major violations. In the ensuing investigation, it was clear that staff did not follow the stipulations of the authorization. Although there were many contributing causes for this incident, the fact that EH&S staff did not follow the RWA was the direct cause of the noncompliance. In the future, EH&S staff must be more attentive to the constraints of the authorizations in place.

EH&S staff incurred four recordable injuries this self-assessment year. This is an increase from two recordable injuries in the FY01 Self-Assessment year. Accident Review Board discussion revealed that greater awareness and communication of hazards could have prevented most of these injuries. Staff must be vigilant in identifying workplace hazards. When hazards are discovered, concerns must be communicated to line management and staff. In a positive development, EH&S employees had only five first aid injuries in the FY02 Self-Assessment year, down from twelve first aid injuries in FY01.

## PY 2002 Self-Assessment Performance Criteria (Final)

Expectation	Validation	Rating	EH&S Division Performance
<b>DEFINE WORK</b>			
<b>E1.</b> Line management regularly communicates ES&H policy, procedures, and lessons learned to all staff. Division staff has clear lines of communication to convey ES&H issues to Lab and Division management, including evidence of clear policy for all staff to communicate safety concerns. Examples of appropriate communication/policy include: <ul style="list-style-type: none"> <li>• Annual all-hands division meeting</li> <li>• Research procedures and protocols include safety notes, PPE requirements</li> <li>• Division-wide emails</li> <li>• Active Division Safety Committee</li> <li>• Group safety meetings</li> <li>• Division ES&amp;H web site</li> <li>• roles and responsibilities detailed in ISM plan</li> </ul>	<b>V1.</b> Is there evidence of on-going and two-way communication of ES&H between line management and staff?	satisfactory - green partial - yellow marginal - red	<b>A1.</b> ES&H communication between line management and staff occurs in several ways. Each group in the division has monthly all hands meetings that include safety as a standing agenda item. Division Safety Committee activities are also discussed at these meetings. (Group meeting agendas and minutes are attached in Attachment Section 1)  A division-wide all hands meeting was held on June 17, 2002. Safety Committee activities and student safety were on the agenda. (The all hands meeting agenda is attached in Attachment Section 1)  The division office sent out two level 1 emails related to safety, one concerning ergonomic hazards and a second from the Division Director stressing the importance of a safe workplace. Group leaders also email safety communications to staff. (See Attachment Section 1)  All group leaders are required in their performance expectations to discuss safety in one on one meetings with each employee they supervise. (See Group Leader ES&H Expectations in Attachment Section 3)
<b>E2.</b> Line management provides evidence that Division ISM plans and work planning adequately identify and prioritize resources to address programmatic needs and work safely.	<b>V2.</b> Has the Division reviewed and updated its ISM Plan within the past year? Are work and safety priorities adequately balanced?	satisfactory - green partial - yellow marginal - red	<b>A2.</b> The division ISM plan was reviewed and updated in September 2001. The Division Director approved this revision in October 2001. (A copy of the ISM Plan is included.)

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<b>IDENTIFY HAZARDS</b>			
<b>E3.</b> Divisions have a process to appropriately identify, analyze, and categorize hazards associated with work. Risks are mitigated, including obtaining necessary authorizations. Examples of hazard review and control assurance include: <ul style="list-style-type: none"> <li>project safety review</li> <li>workspace safety review</li> <li>HEAR database</li> </ul>	<b>V3.</b> For all Division projects and programs, have hazard reviews, including work under formal authorizations (i.e., AHDs, RWAs, SSAs, XRSs) and self-authorized work (i.e., Division approval only) been performed within the required review schedule and documented to the Division Office? Are hazards appropriately addressed? Do the reviews cover both new work and modification of existing work?	>85% of hazards reviewed and controls certified - green >60% - <85% of hazards reviewed and controls certified - yellow <60% of hazards reviewed and controls certified - red	<b>A3.</b> Hazards in all division workspace has been reviewed and documented in the HEAR database. The HEAR database is updated annually by line management. Any modification to existing work is reviewed by line management as part of their annual workspace inspections. In addition, Self-Assessment teams and Division Director and Division Deputy walkthroughs ensure hazards are controlled. (HEAR database records are provided in Attachment Section 2)  All formal authorizations have been updated within the past year. (Spreadsheet provided in Attachment Section 2)
<b>E4.</b> Workspaces are inspected and evaluated on a regular basis.	<b>V4.</b> % Division workspace inspected	>85% - green >60% - <85% - yellow <60% - red	<b>A4.</b> 100%. All division workspace is inspected by the Self-Assessment teams. All group leaders are responsible for inspecting staff workspace. (Self-Assessment team records are provided in SA Team Worksheets Section. Examples of group leader inspection records are provided in Attachment Section 3.)
<b>CONTROL HAZARDS</b>			
<b>E5.</b> Engineering and administrative controls are in place and maintained.	<b>V5.</b> Are fume hoods, biocabinets, interlocks, and glove boxes being certified/checked within the required test schedule? Are required monitors (toxic and flammable gas, stack emission, dosimetry) being calibrated and serviced within the required maintenance schedule or annually?	>85% done on schedule - green >60% - <85% done on schedule - yellow <60% done on schedule - red	<b>A5.</b> 100% on schedule. Engineering controls are inspected for service and calibration requirements during Self-Assessment inspections. (Self-Assessment team records are provided in SA Team Worksheets Section)
<b>E6.</b> Divisions ensure that ergonomic issues are effectively addressed for work processes and staff workstations.	<b>V6.</b> Does the Division have an active ergonomic program for its employees, including ergonomic training (i.e. EHS060, EHS052, EHS062), evaluations, and controls for work processes and	satisfactory - green partial - yellow marginal - red	<b>A6.</b> The division has a very active ergonomics program for employees. 97% of division staff – 60 people in all- required to take EHS0060, Ergonomics for Computer Users, have completed this training. 25 employees have also taken MoveSmart training with another five people

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<b>E7.</b> Managers and staff are regularly involved in ES&H activities.	workstations?  <b>V7.</b> Do line management (including division directors, principal investigators, and senior/mid managers) and staff participates in walkthroughs and other ES&H activities?	satisfactory - green partial - yellow marginal - red	taking MoveSmart retraining. 32 employees have had workstation evaluations, and 5 people have taken EHS0052, Back Safety.  <b>A7.</b> All group leaders inspect their staff workspace annually, as required by their performance expectations. In addition, performance expectations require group leaders to implement safety improvements, track safety deficiencies, and discuss safety at all regular group meetings. (Examples of group leader inspection records and ES&H Expectations are provided in Attachment Section 3.)
<b>PERFORM WORK</b>			
<b>E8.</b> Work is performed within the ES&H conditions and requirements specified by Lab policies and procedures.	<p><b>V8a.</b> Work within authorization: % SAA compliance (including MWSAAs, RWCAAs)</p> <p>% Authorization compliance (i.e. RWAs, RWPs, XRSs, AHDs)</p> <p>% compliance QA waste samples</p> <p># Waste Management issued NCARs</p> <p><b>V8b.</b> Injuries and Accidents: Is TRC rate under 2.67 or evidence of divisional improvement?</p>	<p><i>regulatory driven</i> &gt;90% - green &gt;75% - &lt;90% - yellow &lt;75% - red</p> <p><i>regulatory driven</i> &gt;90% - green &gt;75% - &lt;90% - yellow &lt;75% - red</p> <p><i>regulatory driven</i> &gt;95% or only 1 failure - green &gt;92% - &lt;95% - yellow &lt;92% - red</p> <p><i>regulatory driven</i> 0 - green type 1* - yellow type 2 @ - red</p> <p><i>contract driven</i> TRC &gt;25% below 2.67 or 20% improvement or 1 case/yr - green TRC &lt;25% below/above 2.67 or 10% improvement or</p>	<p><b>A8a.</b> 100%. All SAAs were inspected three times. For all inspections, SAA compliance was 56 for 56. (SAA inspection records are included in Attachment Section 4.)</p> <p>84%. The division had one RWA noncompliance - HWHF personnel and facility contamination (EH&amp;S) - RWA 1015. This resulted in three major and one serious violation. EH&amp;S has a total of 6 RWAs, 4 SSAs, and 15 RWPs.</p> <p>100%. 180 tests were performed on EH&amp;S waste. All waste was properly characterized.</p> <p>0 NCARs.</p> <p>Final data not yet available.</p>

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	Is LWC rate under the DOE contract control level of 1.54 or evidence of divisional improvement?	2 cases/yr - yellow TRC >25% above 2.67 - red  <i>contract driven</i> LWC >25% below 1.54 or 20% improvement or 1 case/yr - green LWC <25% below/above 1.54 or 10% improvement or 2 cases/yr - yellow LWC >25% above 1.54 - red	Final data not yet available.
<b>E9.</b> Staff is proficient in performing work safely.	<b>V9a.</b> % completion of JHQs or equivalent system.	>85% - green >60% - <85% - yellow <60% - red	<b>A9a.</b> 91%
	<b>V9b.</b> Based on JHQs or training profiles, % completion rate for required courses.	<i>contract driven</i> >90% - green >80% - <90% - yellow <80% - red	<b>A9b.</b> 94%
<b>E10.</b> Waste minimization performance goals are met or exceeded	<b>V10.</b> Divisions review multiple research or operations processes. Reviews are documented and , if possible, waste reduction strategies implemented.	satisfactory - green partial - yellow marginal - red	<b>A10.</b> EH&S considered three waste minimization opportunities in self-assessment year FY02:  1) Reuse of oil drums at the facility. Our hope was to reuse the empty drums after the oil had been pumped out. In this way, we would greatly reduce the generation of empty drums.  Upon pursuing this option, we learned that less drums will be generated in the future regardless, as drums will no longer be pumped. Rather, the drums and their contents will be shipped as waste.  2) Benchtop neutralization of acidic mixed waste at B26. We hoped to neutralize approximately 16 liters of hydrochloric acid mixed waste and reclassify the waste as low level radioactive.



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			<p>In discussing this waste stream with the generator, he will not be generating this waste stream in the future. Therefore, there is no opportunity to minimize this waste.</p> <p>3) Benchtop neutralization of caustic liquid mixed waste at B26. We are considering neutralizing approximately 76 liters of sodium hydroxide mixed waste and reclassifying it as low level radioactive waste.</p> <p>This waste stream is still generated by RAML. We are pursuing establishing a WAA and initiating the necessary requirements to legally neutralize this waste at the benchtop. We will continue to pursue this option.</p>
FEEDBACK AND IMPROVEMENT			
<p><b>E11.</b> ES&amp;H deficiencies identified from workspace inspections, self assessment activities, and external appraisals are corrected in a timely manner. A downward trend of repeat deficiencies is established.</p> <p><b>E12.</b> Division employs mechanisms that use ES&amp;H information and reports to institute appropriate mitigation measures or opportunities for improvement. Examples include:</p> <ul style="list-style-type: none"> <li>• Accident Review Board, SAARs reviewed</li> <li>• lessons learned dissemination and review</li> <li>• Division Safety Committee recommendations</li> <li>• Safety Committee minutes</li> </ul>	<p><b>V11.</b> % completion rates for Levels 1, 2, and 3 LCAT-recorded deficiencies and Self Assessment report opportunities for improvement.</p> <p><b>V12a.</b> Does the Division actively review ES&amp;H information and reports to mitigate hazards and promote continuous ES&amp;H improvement?</p>	<p><i>contract driven</i> &gt;90% - green &gt;80% - &lt;90% - yellow &lt;80% - red</p> <p>satisfactory - green partial - yellow marginal - red</p>	<p><b>A11.</b> 97.5%. 39 out of 40 level 3 deficiencies are corrected or on schedule. The division also has 13 “No hazard” findings that are tracked.</p> <p><b>A12a.</b> The Division Safety Committee meets monthly. These meetings focus on ES&amp;H performance within the division. Lessons learned is frequently a topic of these meetings. Meeting minutes are disseminated to all committee members. Committee members discuss Safety Committee activities at group all-hands meetings. (Safety Committee minutes and Safety Committee member expectations are included in Attachment Section 5)</p> <p>The division ISM Plan was revised in September 2001. Significant additions to the Plan included: incorporating Safety Committee recommendations</p>

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<p>communicated</p> <ul style="list-style-type: none"> <li>improvements to ISM plan</li> </ul>	<p><b>V12b.</b> Has Division ensured that accident causes and corrective actions are effectively identified on SAARs?</p>	<p>satisfactory - green partial - yellow marginal - red</p>	<p>that the division adopted, and describing the role of the Accident Review Board.</p> <p><b>A12b.</b> The division exercises great diligence in completion of SAARs. For all recordable injuries and significant first aid injuries, the Division EH&amp;S Liaison and Division Safety Coordinator meet with the injured employee and his/her supervisor to discuss causes and corrective actions. In addition, the division has formed an accident review board that convenes on an as-needed basis to discuss accident causes, corrective actions, and measures to prevent future accidents. (Accident Review Board charter and meeting minutes are included in Attachment Section 5.)</p>

\* “Type 1” NCAR is assigned if the waste is certified to be free of radioactivity and when tested, is shown to be radioactive by DOE standards. Waste would be evaluated against ANSI N13.12, which is based on the relative toxicity of isotope. A Type 1 NCAR is assigned if the item in question has volumetric radioactive contamination of solids or liquids equal to or less than:

3pCi/g (Ex. 226Ra, 230Th, 210Po, 210Pb, 237Np, 239Pu)  
30pCi/g (Ex. 22Na, 60Co, 137Cs)  
300pCi/g (Ex. 131I, 241Pu)  
3000pCi/g (Ex. 3H, 14C, 32P, 35S, 125I, 51Cr).

@ “Type 2” NCAR is assigned if there is a regulatory violation subjecting the Lab to fines and penalties (waste in SAA >1 year), a safety hazard, or the presence of radioactivity where the waste is certified to be free of radioactivity and exceeds limits of ANSI N13.12.